Amendments to the Claims

The listing of claims below is intended to replace all prior listings of the claims:

1. (Original) An isolated protein or polypeptide comprising the amino acid sequence

X-P-X-P-X-X-P-X-P (SEQ ID NO: 1)

wherein X at position 1 is R, K, or Q;

X at position 3 is any amino acid;

X at position 5 is optional and can be P;

X at position 6 is K, Q, or R; and

X at position 8 is any amino acid;

wherein the isolated polypeptide is not a full-length Pneumocystis kexin or a full length Streptococcus pneumoniae pneumococcal surface protein A (PspA).

2. (Original) The isolated protein or polypeptide according to claim 1 wherein the protein or polypeptide is a fragment of a Pneumocystis kexin.

3. (Original) The isolated protein or polypeptide according to claim 1 wherein the protein or polypeptide is a fragment of Streptococcus pneumoniae PspA.

4. (Original) The isolated protein or polypeptide according to claim 1 wherein the protein or polypeptide is encoded by a nucleic acid molecule that (i) comprises the nucleotide sequence of 1-837 of the Pneumocystis A12 clone; (ii) shares at least about 85 percent identity to the nucleotide sequence of 1-837 of the Pneumocystis A12 clone; or (iii) hybridizes to the nucleotide sequence of 1-837 of the Pneumocystis A12 clone under stringency conditions comprising a hybridization medium that contains at most about 10X SSC and a temperature of about 50°C or greater followed by wash conditions at or above stringency conditions of the hybridization.

5. (Original) The isolated protein or polypeptide according to claim 4 wherein the protein or polypeptide is clone A12 of Pneumocystis carinii.

6. (Original) The protein or isolated polypeptide according to claim 1 wherein the isolated protein or polypeptide is less than 600 amino acids in length.

7. (Original) The isolated protein or polypeptide according to claim 1 wherein the isolated protein or polypeptide is less than 300 amino acids in length.

8. (Original) The isolated protein or polypeptide according to claim 1 wherein the isolated protein or polypeptide is less than 100 amino acids in length.

9. (Original) The isolated protein or polypeptide according to claim 1 wherein the isolated protein or polypeptide is less than 50 amino acids in length.

10. (Original) The isolated protein or polypeptide according to claim 1 wherein the isolated protein or polypeptide is less than 25 amino acids in length.

11. (Original) The isolated protein or polypeptide according to claim 1 wherein the isolated protein or polypeptide comprises the amino acid sequence

(X-P-X-P-X-X-P-X-P)n

where n is a whole number greater than 1.

12. (Original) A pharmaceutical composition comprising:
the isolated protein or polypeptide according to claim 1 and
a pharmaceutically acceptable carrier.

13-19 (Cancelled)

20. (Original) An antibody raised against the isolated protein or polypeptide according to claim 1 or an immunogenic conjugate comprising said protein or polypeptide covalently or non-covalently bonded to a carrier molecule.

21-23 (Cancelled)

24. (Original) A pharmaceutical composition comprising:
the antibody according to claim 20 and
a pharmaceutically acceptable carrier.

25. (Original) An immunogenic conjugate comprising:
a carrier protein or polypeptide comprising the amino acid sequence

X-P-X-P-X-X-P-X-P (SEQ ID NO: 1)

wherein X at position 1 is R, K, or Q;
X at position 3 is any amino acid;
X at position 5 is optional and can be P;
X at position 6 is K, Q, or R; and
X at position 8 is any amino acid; and
a bacterial molecule covalently or non-covalently bonded to the carrier protein or polypeptide.

26-27 (Cancelled)

28. (Original) The immunogenic conjugate according to claim 25 wherein the carrier protein or polypeptide is a Pneumocystis protein or polypeptide.

29. (Original) The immunogenic conjugate according to claim 28 wherein the Pneumocystis protein or polypeptide is a kexin or a protein or polypeptide comprising the amino acid sequence of clone A12.

30. (Original) The immunogenic conjugate according to claim 25 wherein the carrier protein is a Streptococcus pneumoniae protein or polypeptide.

31. (Original) The immunogenic conjugate according to claim 30 wherein the Streptococcus pneumoniae protein or polypeptide is a protein A.

32. (Original) A pharmaceutical composition comprising:
the immunogenic conjugate according to claim 25 and
a pharmaceutically acceptable carrier.

33. (Original) An antibody raised against the immunogenic conjugate according to claim 25.

34. (Original) The antibody according to claim 33, wherein the antibody is polyclonal.

35. (Original) The antibody according to claim 33, wherein the antibody is monoclonal.

36. (Cancelled)

37. (Original) A pharmaceutical composition comprising:
the antibody according to claim 33 and
a pharmaceutically acceptable carrier.

38. (Original) A method of treating or preventing infection in a patient by a Pneumocystis organism, the method comprising:

administering to a patient an amount of one or more agents selected from the group of:

(i) the protein or polypeptide according to claim 1,

(ii) a first immunogenic conjugate comprising the protein or polypeptide of (i) covalently or non-covalently bonded to a carrier molecule,

(iii) a second immunogenic conjugate comprising a carrier protein or polypeptide that includes the protein or polypeptide of (i) and a bacterial molecule covalently or non-covalently bonded to the carrier protein or polypeptide, or

(iv) combinations thereof,

where the amount is effective to induce an immune response in the patient and thereby treat or prevent infection of the patient by a Pneumocystis organism.

39. (Original) The method according to claim 38 wherein said administering is carried out orally, by inhalation, by intranasal instillation, topically, transdermally, parenterally, subcutaneously, intravenous injection, intra-arterial injection, intramuscular injection, intraplurally, intraperitoneally, by intracavitary or intravesical instillation, intraocularly, intraventricularly, intralesionally, intraspinally, or by application to mucous membranes.

40. (Original) The method according to claim 38 wherein the protein or polypeptide or one or both of the immunogenic conjugates is present in a pharmaceutical composition.

41. (Original) The method according to claim 38 wherein the protein or polypeptide is administered.

42. (Original) The method according to claim 41 wherein the protein or polypeptide comprises the amino acid sequence of clone A12.

43. (Original) The method according to claim 38 wherein the first immunogenic conjugate is administered.

44. (Cancelled)

45. (Original) The method according to claim 38 wherein the second immunogenic conjugate is administered.

46. (Original) The method according to claim 45 wherein the carrier protein or polypeptide is a Pneumocystis kexin or comprises the amino acid sequence of Pneumocystis clone A12.

47. (Original) The method according to claim 45 wherein the carrier protein or polypeptide is a Streptococcus pneumoniae protein A and said administering is carried out for treatment or prevention of Pneumocystis infection.

48. (Original) The method according to claim 45 wherein the bacterial molecule is a pneumococcal capsular polysaccharide or a meningococcal outer membrane protein.

49. (Original) The method according to claim 38, wherein a combination of two or more of the agents is administered.

50. (Original) The method according to claim 38 wherein the patient is a mammal.

51. (Cancelled)

52. (Original) A method of treating or preventing infection in a patient by a Pneumocystis organism, the method comprising:

administering to a patient an amount of

(i) a first antibody raised against the isolated protein or polypeptide according to claim 1,

(ii) a second antibody raised against an immunogenic conjugate comprising said protein or polypeptide covalently or non-covalently bonded to a carrier molecule,

(iii) a third antibody that recognizes Pneumocystis kexin and the protein of clone A12, or

(iv) any combination thereof,

wherein the amount is effective to treat or prevent infection by either a Pneumocystis organism.

53. (Original) The method according to claim 52 wherein said administering is carried orally, by inhalation, by intranasal instillation, topically, transdermally, parenterally, subcutaneously, intravenous injection, intra-arterial injection, intramuscular injection, intraplurally, intraperitoneally, by intracavitary or intravesical instillation, intraocularly, intraventricularly, intralesionally, intraspinally, or by application to mucous membranes.

54. (Original) The method according to claim 52 wherein the first or second antibody is polyclonal.

55. (Original) The method according to claim 52 wherein the first or second antibody is monoclonal.

56. (Original) The method according to claim 52 wherein the first antibody is administered.

57. (Original) The method according to claim 52 wherein the second antibody is administered.

58. (Original) The method according to claim 52 wherein the third antibody is administered.

59. (Original) The method according to claim 58 wherein the third antibody is monoclonal antibody 4F11, monoclonal antibody 1G4, or monoclonal antibody 4F11(G1).

60. (Original) The method according to claim 52 wherein a combination of the first, second, and/or third antibodies is administered.

61. (Original) The method according to claim 52 wherein the patient is a mammal.

62-63 (Cancelled)

64. (Original) A method of treating or preventing infection in a patient by a Pneumocystis organism, the method comprising:

administering to a patient an amount of a Pneumocystis protein or polypeptide comprising the amino acid sequence of clone A12, a Pneumocystis kexin, or any combination thereof, where the amount is effective to induce an immune response in the patient and thereby treat or prevent infection of the patient by the Pneumocystis organism.

65. (Original) An isolated nucleic acid molecule encoding the isolated protein or polypeptide according to claim 1.

66. (Original) The isolated nucleic acid molecule according to claim 65 wherein the encoded protein or polypeptide is a fragment of a Pneumocystis kexin.

67. (Original) The isolated nucleic molecule according to claim 65 wherein the encoded protein or polypeptide is a fragment of Streptococcus pneumoniae protein A.

68. (Original) The isolated nucleic acid molecule according to claim 65 wherein the encoded protein or polypeptide comprises the amino acid sequence of Pneumocystis carinii clone A12.

69. (Original) The isolated nucleic acid molecule according to claim 65 wherein the protein or polypeptide is encoded by a nucleic acid molecule that (i) comprises the nucleotide sequence of 1-837 of the Pneumocystis A12 clone; (ii) shares at least about 85 percent identity to the nucleotide sequence of 1-837 of the Pneumocystis A12 clone; or (iii) hybridizes to the nucleotide sequence of 1-837 of the Pneumocystis A12 clone under stringency conditions comprising a hybridization medium that contains at most about 10X SSC and a temperature of about 50°C or greater followed by wash conditions at or above stringency conditions of the hybridization.

70. (Original) The isolated nucleic acid according to claim 65 wherein the nucleic acid is DNA.

71. (Original) A DNA construct comprising:
a DNA molecule according to claim 70; and
transcriptional and translational regulatory sequences operably linked to said nucleotide sequence.

72. (Original) The DNA construct according to claim 71 wherein the encoded protein or polypeptide is a fragment of a Pneumocystis kexin, a fragment of Streptococcus pneumoniae protein A, or comprises the amino acid sequence of Pneumocystis carinii clone A12.

73. (Original) The DNA construct according to claim 71 wherein the DNA molecule (i) comprises the nucleotide sequence of 1-837 of the Pneumocystis A12 clone; (ii) shares at least about 85 percent identity to the nucleotide sequence of 1-837 of the Pneumocystis A12 clone; or (iii) hybridizes to the nucleotide sequence of 1-837 of the Pneumocystis A12 clone under stringency conditions comprising a hybridization medium that contains at most about 10X SSC and a temperature of about 50°C or greater followed by wash conditions at or above stringency conditions of the hybridization.

74. (Original) The DNA construct according to claim 71 wherein the transcriptional and translational regulatory sequences are effective for expressing the encoded protein or polypeptide in a prokaryotic cell.

75. (Original) The DNA construct according to claim 71 wherein the transcriptional and translational regulatory sequences are effective for expressing the encoded protein or polypeptide in a eukaryotic cell.

76. (Original) The DNA construct according to claim 71 wherein the transcriptional and translational regulatory sequences are effective for expressing the encoded protein or polypeptide in a mammal.

77. (Original) An expression vector into which is inserted the DNA construct according to claim 71.

78. (Original) The expression vector according to claim 77 wherein the vector is a plasmid or a viral vector.

79. (Original) The expression vector according to claim 78 wherein the transcriptional and translational regulatory sequences are effective for expressing the encoded protein or polypeptide in a mammal.

80. (Original) A host cell comprising the DNA construct according to claim 71.

81. (Original) The host cell according to claim 80 wherein the host cell is an animal cell, a bacterial cell, an insect cell, a fungal cell, a yeast cell, a plant cell, or an algal cell.

82. (Original) The host cell according to claim 80 wherein the host cell is a mammalian cell and the transcriptional and translational regulatory sequences are effective for expressing the encoded protein or polypeptide in a mammal cell.

83. (Original) The host cell according to claim 82 wherein the host cell is in vivo.

84. (Original) The host cell according to claim 82 wherein the host cell is in vitro.

85. (Original) The host cell according to claim 81 wherein the DNA construct is present in an expression vector.

86. (Original) A liposomal composition comprising:

a pharmaceutically acceptable carrier;

a plurality of liposomes suspended in the pharmaceutically acceptable carrier, each comprising a lipid vesicle and an aqueous phase retained within the lipid vesicle; and

one or more DNA constructs according to claim 71 present within the aqueous phase of the liposomes.

87. (Original) The liposomal composition according to claim 86 wherein each of the one or more DNA constructs is present in an expression vector.

88. (Original) A polymeric delivery vehicle comprising a polymeric matrix and one or more DNA constructs according to claim 71.